

Marc E. Hankin (SBN 170505)
Marc@hankinpatentlaw.com
Anooj Patel (SBN 300297)
Anooj@hankinpatentlaw.com
HANKIN PATENT LAW, APC
12400 Wilshire Boulevard, Suite 1265
Los Angeles, CA 90024
Tel: (310) 979-3600
Fax: (310) 979-3603

DESMARAIS LLP
John M. Desmarais (SBN 320875)
Karim Z. Oussayef (*pro hac vice* pending)
Robert C. Harrits (*pro hac vice* pending)
230 Park Avenue
New York, New York 10169
Tel: (212) 351-3400
Fax: (212) 351-3401

Attorneys for Plaintiff International Business Machines Corporation

**IN THE UNITED STATES DISTRICT COURT
FOR THE CENTRAL DISTRICT OF CALIFORNIA**

INTERNATIONAL BUSINESS
MACHINES CORPORATION, a New
York Corporation,

Plaintiff,

v.

ZILLOW GROUP, INC., a Washington
Corporation, ZILLOW, INC., a
Washington Corporation,

Defendants.

Case No. 8:19-CV-01777

JURY TRIAL DEMANDED

COMPLAINT FOR PATENT INFRINGEMENT

Plaintiff International Business Machines Corporation (“IBM”), for its
Complaint for Patent Infringement against Zillow Group, Inc. (“Zillow Group”) and
Zillow, Inc. (collectively “Defendants” or “Zillow”), alleges as follows:

JURISDICTION AND VENUE

1. This action arises under 35 U.S.C. § 271 for Defendants’ infringement of
IBM’s United States Patent Nos. 7,072,849 (the “849 patent”), 7,076,443 (the “443

1 patent”), 7,187,389 (the “389 patent”), 7,631,346 (the “346 patent”), 8,315,904 (the
2 “904 patent”), 9,158,789 (the “789 patent”), and 9,245,183 (the “183 patent”)
3 (collectively, the “Patents-In-Suit”).

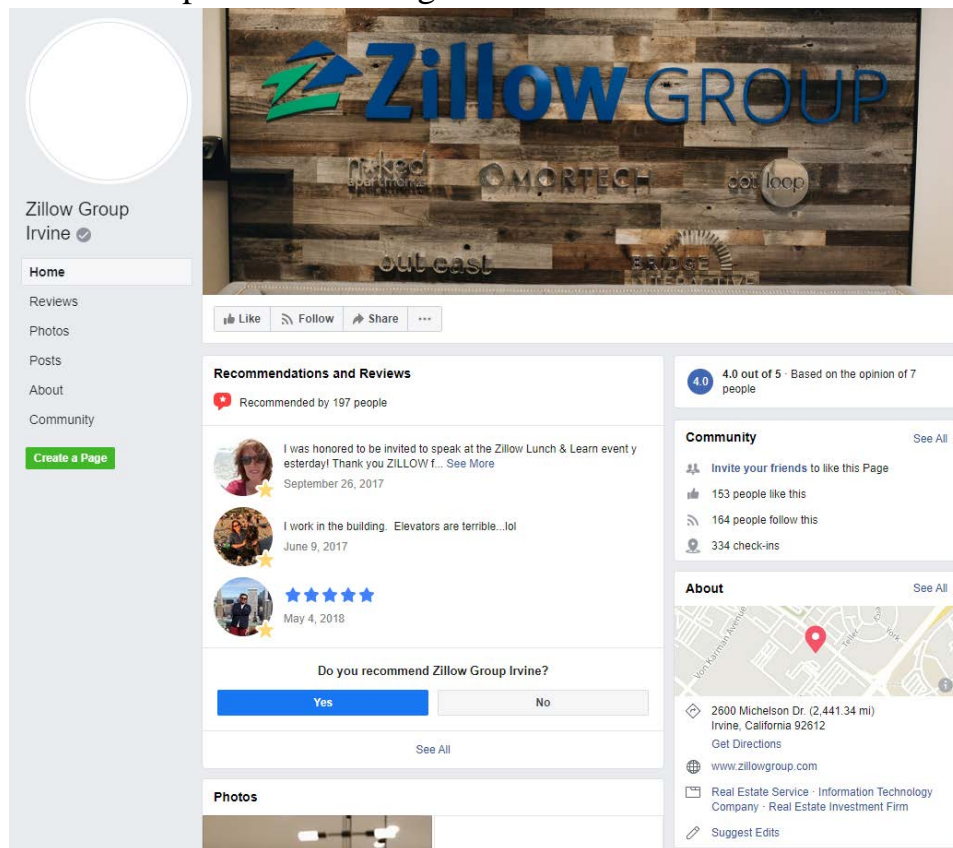
4 2. This action arises under the patent laws of the United States, including 35
5 U.S.C. § 271 *et seq.* The jurisdiction of this Court over the subject matter of this action
6 is proper under 28 U.S.C. §§ 1331 and 1338(a).

7 3. This Court has personal jurisdiction over Zillow Group and Zillow, Inc.
8 because, among other things: Zillow Group and Zillow, Inc. have a regular and
9 established place of business in this judicial district; Zillow Group and Zillow, Inc. have
10 committed, aided, abetted, contributed to and/or participated in the commission of acts
11 giving rise to this action within the State of California and this judicial district and have
12 established minimum contacts within the forum such that the exercise of jurisdiction
13 over Zillow Group and Zillow, Inc. would not offend traditional notions of fair play and
14 substantial justice; Zillow Group and Zillow, Inc. have placed products and services
15 that practice the claims of the Patents-in-Suit into the stream of commerce with the
16 reasonable expectation and/or knowledge that actual or potential users of such products
17 and/or services were located within this judicial district; and Zillow Group and Zillow,
18 Inc. have sold, advertised, solicited customers, marketed and distributed its services that
19 practice the claims of the Patents-in-Suit in this judicial district.

20 4. Venue is proper in this Court pursuant to 28 U.S.C. §§ 1391(b) and (c) and
21 1400(b), at least because Zillow Group and Zillow, Inc. have a regular and established
22 place of business in this judicial district at 2600 Michelson Drive, Suite 1200, Irvine,
23 CA 92612. The building at 2600 Michelson Drive is marked with Zillow Group’s name
24 and logo:
25
26
27
28



Ex. 1 (<https://www.loopnet.com/Listing/2600-Michelson-Dr-Irvine-CA/14368559/>).



Ex. 2 (<https://www.facebook.com/pages/category/Real-Estate-Service/Zillow-Group-Irvine-132635443939887/>).

1 The building is also home to Zillow, Inc.¹ Zillow Group and Zillow, Inc. have
2 approximately 60,074 square feet of office space in Irvine, California.²

3 5. Venue is also proper because Zillow Group and Zillow, Inc. have
4 numerous employees in the judicial district who are responsible for the design,
5 operation, and sale of the accused websites and mobile applications. Zillow Group's
6 and Zillow, Inc.'s technical employees in the district have titles such as: Senior UI
7 Designer, Senior Software Engineer, Software Engineer, Director of Product
8 Development, Full Stack JavaScript Engineer, Senior Software Developer, DevOps
9 Engineer, UI/UX Designer, and QA Engineer.

10 6. Zillow Group's and Zillow, Inc.'s technical employees located in Irvine,
11 California design, develop, and implement the infringing functionalities of the accused
12 website and mobile applications. Zillow Group's and Zillow, Inc.'s technical
13 employees in the district therefore have relevant information related to the design,
14 development, and operation of the accused website and mobile applications.

15 7. Zillow Group and Zillow, Inc. also have sales and marketing employees
16 who work in the judicial district with titles such as: Sales, Sales Executive, Inside Sales,
17 Senior Account Manager, Agent Care Consultant, and Regional Sales Executive.

18 8. Zillow Group's and Zillow, Inc.'s sales and marketing employees located
19 in Irvine, California are responsible for the sale and marketing of the infringing
20 functionalities of the accused website and mobile applications.³ Zillow Group's and
21 Zillow, Inc.'s sales and marketing employees in the district therefore have relevant
22 information related to demand for the infringing functionality, the marketing of the
23 accused website and mobile applications, and the revenue, costs, and profit of the
24 accused websites and mobile applications.

25
26 ¹ Ex. 3 (<http://zillowgroup.mediaroom.com/2012-04-16-Zillow-to-Open-New-Office-Grow-Sales-Force-In-Orange-County-Calif> (describing 600 Michelson Drive, Irvine, CA 92612 as a Zillow office location)).

27 ² Ex. 4 (Zillow Group 2018 10-K) at 38.

28 ³ *Id.* at 14.

9. In addition to workers already present in the district, Zillow Group and Zillow, Inc. continue to advertise available job postings in the area:

Software Development Engineer Software Development · Zillow Group · Irvine	>
QA Engineer Software Development · Zillow Group · Irvine	>
Software Development Manager Software Development · Zillow · Irvine	>
Product Manager Product Development/Design · Zillow · Irvine	>

Ex. 5 (<https://careers.zillowgroup.com/List-Jobs/location/Irvine,Los-angeles>)

10. On information and belief, Zillow Group and Zillow, Inc. store numerous documents related to the design, development, operation, sale, and marketing of the accused websites and mobile applications in the district. Zillow Group and Zillow, Inc. store these documents at their offices at 600 Michelson Drive, Suite 1200, Irvine, CA 92612 in order to support their employees located there.

11. On information and belief, Zillow Group and Zillow, Inc. offer networking and support services from its offices located in the district.

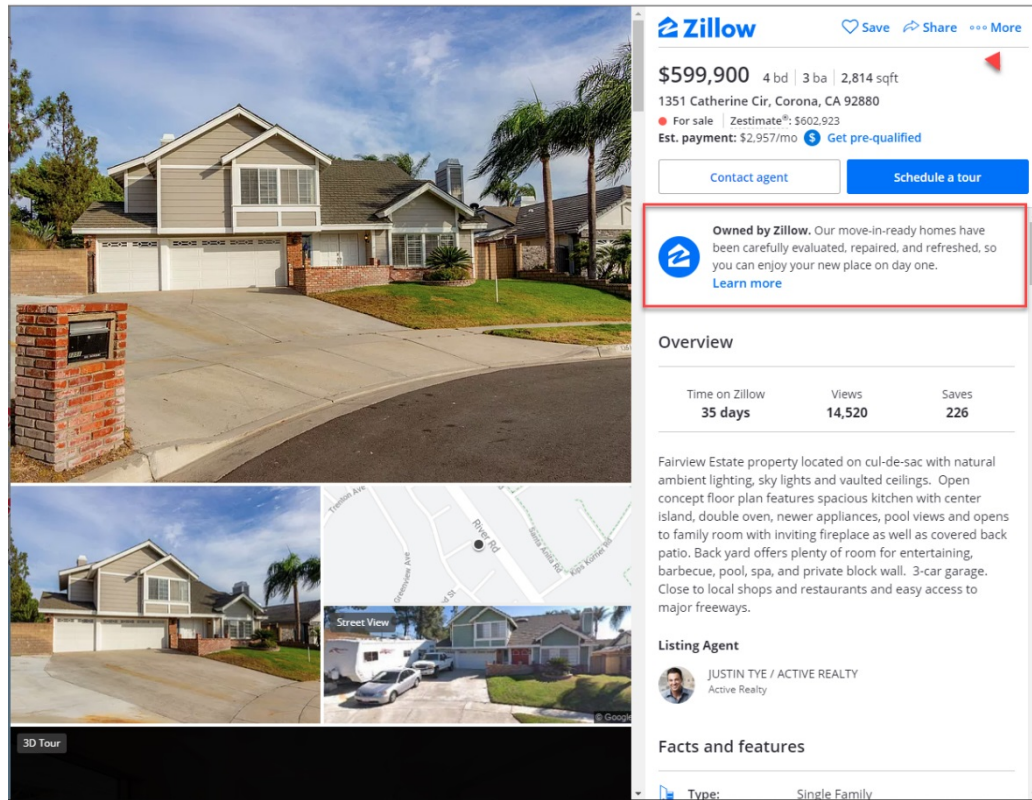
12. Venue is also proper in this district because Zillow Group and Zillow, Inc. own numerous properties that they have purchased through “Zillow Offers.” For example, Zillow Group and Zillow have made “Zillow Offers” available in at least Los Angeles,⁴ Orange County,⁵ and Riverside County. As part of “Zillow Offers,” Zillow Group and Zillow, Inc. purchase homes directly from home owners, make repairs, and then sell the homes.⁶ For example, Zillow Group and Zillow, Inc. own the properties

⁴ Ex. 6 (<https://www.latimes.com/business/la-fi-zillow-home-buying-20181211-story.html>).

⁵ Ex. 7 (<https://www.ocregister.com/2019/05/09/zillow-offers-announces-plans-to-expand-ibuying-in-l-a-orange-counties/>).

⁶ Ex. 8 (<https://www.zillow.com/offers/> (describing process for selling a home to Zillow Group and Zillow)).

at 1351 Catherine Cir, Corona, CA 92880 and 101 Englemann Dr., Corona, CA 92881 in Riverside County.



Zillow Save Share More

\$599,900 4 bd | 3 ba | 2,814 sqft

1351 Catherine Cir, Corona, CA 92880

For sale Zestimate®: \$602,923

Est. payment: \$2,957/mo Get pre-qualified

Contact agent Schedule a tour

Owned by Zillow. Our move-in-ready homes have been carefully evaluated, repaired, and refreshed, so you can enjoy your new place on day one. [Learn more](#)

Overview

Time on Zillow	Views	Saves
35 days	14,520	226

Fairview Estate property located on cul-de-sac with natural ambient lighting, sky lights and vaulted ceilings. Open concept floor plan features spacious kitchen with center island, double oven, newer appliances, pool views and opens to family room with inviting fireplace as well as covered back patio. Back yard offers plenty of room for entertaining, barbecue, pool, spa, and private block wall. 3-car garage. Close to local shops and restaurants and easy access to major freeways.

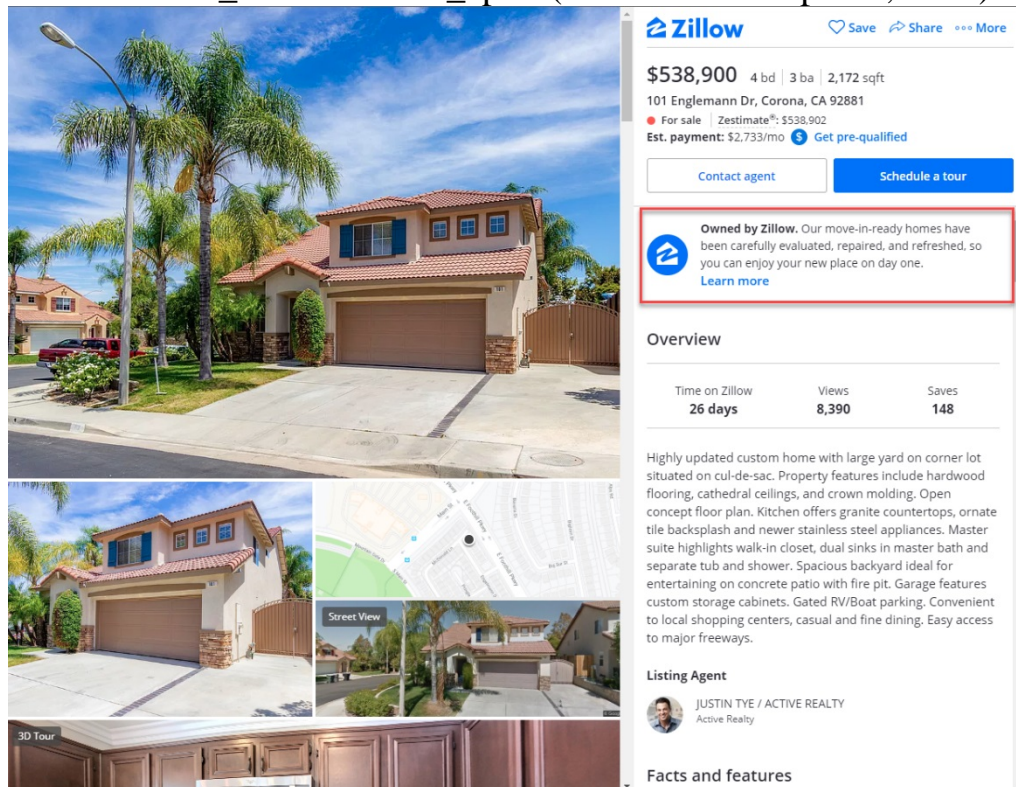
Listing Agent

JUSTIN TYE / ACTIVE REALTY
Active Realty

Facts and features

Type: Single Family

https://www.zillow.com/homes/1351-Catherine-Cir-Corona,-CA,-92880_rb/108378000_zpid/ (last accessed Sept. 13, 2019)



Zillow Save Share More

\$538,900 4 bd | 3 ba | 2,172 sqft

101 Englemann Dr, Corona, CA 92881

For sale Zestimate®: \$538,902

Est. payment: \$2,733/mo Get pre-qualified

Contact agent Schedule a tour

Owned by Zillow. Our move-in-ready homes have been carefully evaluated, repaired, and refreshed, so you can enjoy your new place on day one. [Learn more](#)

Overview

Time on Zillow	Views	Saves
26 days	8,390	148

Highly updated custom home with large yard on corner lot situated on cul-de-sac. Property features include hardwood flooring, cathedral ceilings, and crown molding. Open concept floor plan. Kitchen offers granite countertops, ornate tile backsplash and newer stainless steel appliances. Master suite highlights walk-in closet, dual sinks in master bath and separate tub and shower. Spacious backyard ideal for entertaining on concrete patio with fire pit. Garage features custom storage cabinets. Gated RV/Boat parking. Convenient to local shopping centers, casual and fine dining. Easy access to major freeways.

Listing Agent

JUSTIN TYE / ACTIVE REALTY
Active Realty

Facts and features

1 [https://www.zillow.com/homes/101-Englemann-Dr-Corona,-CA,-](https://www.zillow.com/homes/101-Englemann-Dr-Corona,-CA,-92881_rb/54952838_zpid/)
2 [92881_rb/54952838_zpid/](https://www.zillow.com/homes/101-Englemann-Dr-Corona,-CA,-92881_rb/54952838_zpid/) (last accessed Sept. 13, 2019)

3 These properties also constitute regular and established places of business in this
4 judicial district.

5 13. Moreover, Zillow Group and Zillow, Inc. commit (directly and/or
6 indirectly) acts of infringement in this judicial district, including at least through the
7 provision and use of their website and mobile applications from their offices in this
8 judicial district. Zillow Group and Zillow, Inc. also commit acts of infringement in this
9 district by offering real estate and related services through its website and mobile
10 applications.

11 **INTRODUCTION**

12 14. IBM is a world leader in technology and innovation. IBM spends billions
13 of dollars each year on research and development, and those efforts have resulted in the
14 issuance of more than 110,000 patents worldwide. Patents enjoy the same fundamental
15 protections as real property. IBM, like any property owner, is entitled to insist that
16 others respect its property and to demand payment from those who take it for their own
17 use. Defendants have built their business model on the use of IBM's patents. Moreover,
18 despite IBM's repeated attempts to reach a business resolution, Defendants refuse to
19 negotiate a license to IBM's patent portfolio. This lawsuit seeks to stop Defendants
20 from continuing to use IBM's intellectual property without authorization.

21 **THE PARTIES**

22 15. Plaintiff IBM is a New York corporation, with its principal place of
23 business at 1 New Orchard Road, Armonk, New York 10504.

24 16. Defendant Zillow Group is a Washington corporation with a principal
25 place of business at 1301 Second Avenue, Floor 31, Seattle, Washington. Zillow Group
26 may be served with process at its registered agent C T Corporation System, 818 West
27 Seventh Street, Suite 930, Los Angeles, California 90017.
28

17. Zillow Group “operates the largest portfolio of real estate and home-related brands on mobile and the web which focus on all stages of the home lifecycle: renting, buying, selling and financing.”⁷ Zillow Group provides a “comprehensive suite of marketing software and technology solutions to help real estate, rental, and mortgage professionals maximize business opportunities and connect with millions of consumers.”⁸ Zillow Group generates revenue at least based on the “sale of advertising under [its] Premier Agent and Premier Broker programs.”⁹ Zillow Group’s portfolio of real estate and home-related brands includes Zillow. Zillow Group owns and completely controls Zillow, Inc.

18. Defendant Zillow, Inc. is a Washington corporation with a principal place of business at 1301 Second Avenue, Floor 31, Seattle, Washington. Zillow, Inc. may be served with process at its registered agent C T Corporation System, 818 West Seventh Street, Suite 930, Los Angeles, California 90017. Zillow, Inc. also operates the website www.zillow.com and the Zillow mobile application. Zillow, Inc. provides online real estate listings and related services to consumers and local real estate agents through the websites at www.zillow.com and through the Zillow mobile applications.

19. Zillow operates “Zillow Offers,” “which allows homeowners to [] sell their home directly to Zillow . . . [and then Zillow] makes certain repairs and updates, and then lists it for sale on the open market.”¹⁰ Zillow operates “Zillow Offers” in the Central District of California.

FACTUAL BACKGROUND

A. IBM Is A Recognized Innovator.

20. IBM is recognized throughout the world as a pioneer in many aspects of science and technology. On eight occasions, more times than any other company or

⁷ Ex. 4 (Zillow Group 2018 10-K) at 3.

⁸ *Id.*

⁹ *Id.*

¹⁰ *Id.* at 10.

1 organization, IBM has been awarded the U.S. National Medal of Technology, the
2 nation's highest award for technological innovation. During IBM's over-100-year
3 history, IBM's employees have included six Nobel laureates, six Turing awards, five
4 National Medal of Science recipients, and at least twenty-five inventors in the National
5 Inventors Hall of Fame.

6 21. These and other IBM employees have introduced the world to technology
7 that the global community takes for granted today, including the dynamic random
8 access memory—DRAMs—found in nearly all modern computers; magnetic disk
9 storage—hard disk drives—found in computers and portable music players; and some
10 of the world's most powerful supercomputers, including Deep Blue, the first computer
11 to beat a reigning chess champion and which is on display at the Smithsonian's National
12 Museum of American History in Washington, D.C. IBM's commitment to developing
13 these types of advanced computing technologies has helped to usher in the information
14 age.

15 **B. IBM Is Committed To Protecting Its Innovations Through The Patent**
16 **System.**

17 22. IBM's research and development operations differentiate IBM from many
18 other companies. IBM annually spends billions of dollars on research and development,
19 yielding inventions that have literally changed the way the world works. For over two
20 decades the United States Patent and Trademark Office ("USPTO") has issued more
21 patents to IBM than to any other company in the world.

22 23. Like the research upon which the patents are based, IBM's patents also
23 benefit society. Indeed, the Supreme Court has recognized that the patent system
24 encourages both the creation and the disclosure of new and useful advances in
25 technology. Such disclosure, in turn, permits society to innovate further. And, as the
26 Court has further recognized, as a reward for committing resources to innovation and
27 for disclosing that innovation, the patent system provides patent owners with the
28

1 exclusive right to prevent others from practicing the claimed invention for a limited
2 period of time.

3 **C. IBM Routinely Licenses Its Patents In Many Fields But Will Enforce Its**
4 **Rights Against Those Who Use Its Intellectual Property Unlawfully.**

5 24. IBM's commitment to creating a large patent portfolio underscores the
6 value that IBM places in the exchange of innovation, and disclosure of that innovation,
7 in return for limited exclusivity. Indeed, IBM has used its patent portfolio to generate
8 revenue and other significant value for the company by executing patent cross-license
9 agreements. The revenue generated through patent licensing enables IBM to continue
10 to commit resources to innovation. Cross licensing, in turn, provides IBM with the
11 freedom to innovate and operate in a manner that respects the technology of others.

12 25. Given the investment IBM makes in the development of new technologies
13 and the management of its patent portfolio, IBM and its shareholders expect companies
14 to act responsibly with respect to IBM's patents. IBM facilitates this by routinely
15 licensing its patents in many fields and by working with companies that wish to use
16 IBM's technology in those fields in which IBM grants licenses. When a company
17 appropriates IBM's intellectual property but refuses to negotiate a license, IBM has no
18 choice but to seek judicial assistance.

19 **D. IBM Invented Methods For Presenting Applications And Advertisements**
20 **In An Interactive Service While Developing The PRODIGY Online**
21 **Service.**

22 26. The inventors of the '849 patent developed the patented technologies as
23 part of IBM's efforts to launch the PRODIGY online service ("Prodigy"), a forerunner
24 to today's Internet, in the late 1980s. The inventors believed that to be commercially
25 viable, Prodigy would have to provide interactive applications to millions of users with
26 minimal response times. The inventors believed that the "dumb" terminal approach that
27 had been commonly used in conventional systems, which heavily relied on host servers'
28 processing and storage resources for performance, would not be suitable. As a result,
the inventors sought to develop more efficient methods of communication that would

1 improve the speed and functionality of interactive applications and reduce equipment
2 capital and operating costs.

3 27. In light of the above considerations, the inventors developed novel
4 methods for presenting applications and advertisements in an interactive service that
5 would take advantage of the computing power of each user's PC and thereby reduce
6 demand on host servers, such as those used by Prodigy. The inventors recognized that
7 if applications were structured to be comprised of "objects" of data and program code
8 capable of being processed by a user's PC, the Prodigy system would be more efficient
9 than conventional systems. By harnessing the processing and storage capabilities of the
10 user's PC, applications could then be composed on the fly from objects stored locally
11 on the PC, reducing reliance on Prodigy's server and network resources.

12 28. The service that would eventually be called Prodigy embodied inventions
13 from the '849 patent when it launched in late 1988, before the existence of the World
14 Wide Web. The efficiencies derived from the use of the patented technology permitted
15 the implementation of one of the first graphical user interfaces for online services. The
16 efficiencies also allowed Prodigy to quickly grow its user base. By 1990, Prodigy had
17 become one of the largest online service providers with hundreds of thousands of users.
18 The technological innovations embodied in these patents persist to this day and are
19 fundamental to the efficient communication of Internet content.

20 E. **IBM Invented Methods For A Runtime User Account Creation Operation**
21 **Using A Single-Sign-On Process In A Federated Computer Environment.**

22 29. The inventors of the '346 patent developed the patented technology as part
23 of IBM's efforts to improve single-sign-on technology. To access a protected resource
24 at a service provider on the Internet, a user typically has to authenticate him or herself
25 with the service provider. Single-sign-on technology facilitates a user's connection to
26 resources by requiring only one authorization operation during a particular user session.
27 However, conventional technology at the time of the invention required that the user
28 already have an account with the service provider to use single-sign-on technology.

1 30. The inventors of the '346 patent sought to develop single-sign-on
2 technology that would permit a new user of a service provider to access protected
3 resources. They developed novel methods for systems interacting within a federated
4 computing environment to trigger a single-sign-on operation on behalf of a user that
5 would obtain access to a protected resource and create an account for the user. The
6 specification discloses how to structure a federated computing environment and the
7 sequence and content of interactions between different systems that can support the
8 patented methods. The '346 patent thus extends the benefits of single-sign-on
9 technology.

10 **F. IBM Invented Algorithms For Computing The Desirability Of A**
11 **Geographic Area Using Dynamic Image Data.**

12 31. The inventors of the '183 patent developed the patented technologies as
13 part of IBM's efforts to improve a computer's ability to assess the overall condition of
14 a particular area. At the time of the invention, computers had the ability to record video
15 and images of an area and to store those videos and images. However, computers did
16 not have the ability to use those images to judge the overall conditions and desirability
17 of a particular neighborhood or area. Numerous qualities go into determining whether
18 a neighborhood, or even a particular block, is desirable, such as whether an area has
19 well-maintained landscaping, a lack of broken windows, ample lighting from street
20 lamps, freshly painted walls, no graffiti, and much more. Computers lacked the ability
21 to evaluate the images they collected in order to get an "intuitive" sense of a particular
22 area. There existed a need for a computer algorithm to allow computers to be able to
23 figure out the desirability of a given area and to present that information in an easily
24 digestible way to users.

25 32. The inventors of the '183 patent recognized the need for methods for
26 efficiently determining location conditions remotely and presenting those location
27 conditions to users. The novel techniques they thought of allowed a computer to
28 determine a score representing the location conditions and to present those results to a

1 user in the form of an easily understandable map. The techniques include, for example,
2 retrieving image data associated with a plurality of locations within a specific
3 geographic area, and comparing the retrieved image data with stored image data. The
4 inventors appreciated that the stored image data could be used to form a baseline
5 measurement value that the newly obtained images could be compared to. Based on
6 the results of the comparison, a score value could be calculated. The calculated value
7 could be used to indicate the real time condition values associated with the various
8 locations, and from that an overall condition score could be calculated for the given
9 area. This information could then be easily presented to a user through the generation
10 of a map indicating the overall condition score. This allowed a user to remotely, clearly,
11 and easily identify a local area's desirability. The novel techniques of the '183 patent
12 provide a simple and accurate process for determining and presenting the conditions of
13 an area that did not exist in the prior art.

14 **G. IBM Invented Methods For Providing Coordinated Geospatial, List-Based**
15 **And Filter-Based Selection.**

16 33. The inventors of the '789 patent developed the patented technologies as
17 part of IBM's efforts to improve technology for providing search results to users. Prior
18 to the inventions disclosed in the '789 patent, when a user ran a search and requested a
19 map view of their results, they were presented with all (or a set number) of the results
20 that fit within the area of the screen designated for the map. While helpful for users to
21 be able to visualize the location of their search results, this approach had several
22 drawbacks. Specifically, this approach did not allow for a user to create a customized
23 search area to fit a user's specific geographical needs. For example, a person searching
24 for rental properties may want to search within an irregular shaped area determined by
25 the acceptable walking distances between several modes of public transportation. Or
26 they may wish to create a search that excludes particularly noisy blocks, tourist
27 attractions, or neighborhoods that they wish to avoid. If a person's desired geographical
28 search area did not neatly conform to the designated square the map was displayed in,

1 they were presented with many irrelevant results, which could lead to frustration. It
2 was particularly frustrating to users if only a subset of search results were displayed on
3 the map at a time, because in order to find all of the results that a user was actually
4 interested in, they would have to go through every page of the results to be sure they
5 did not miss anything relevant. Using the prior methods of searching and filtering, a
6 user would be forced to sort through results that did not fit their search criteria, but were
7 automatically returned because they fit within the map's dimensions on the screen. A
8 solution was needed that allowed a user to designate their own area of the map to search
9 and to select all of the results within that area for display to the user.

10 34. The inventors of the '789 patent addressed these problems by providing a
11 method of searching that allowed for greater interactivity and selection capability. The
12 inventors devised ways to allow users to select a customized area of the map display in
13 order to update the selection in both the map and list displays to obtain search results
14 that were the most relevant to users. Specifically, the inventors of the '789 patent
15 realized that a user could get more relevant search results if they were able to draw a
16 selection area of a user-determined shape on the map display. The search results
17 displayed on the map were then filtered by selecting and deselecting elements according
18 to the user-determined selection area. Further, by synchronizing the map display and
19 the list display to concurrently update the results, a user was presented with detailed
20 information of the points of interest in the user designated area. The invention allowed
21 users to more finely filter their results in order to hone in on the most relevant
22 information. The novel technologies of the '789 patent greatly improved upon the prior
23 art by allowing bidirectional interaction between the displays and multiple linked
24 selection and filtering capabilities in the displays, which allowed users to more finely
25 filter their search criteria and obtain more relevant results than prior art methods.

26 **H. IBM Invented Methods For Improving Graphical User Interfaces By Using**
27 **Layers To Simultaneously Display Multiple Object Categories.**
28

1 35. The inventors of the '389 patent developed the patented technologies as
2 part of IBM's efforts to improve technology for displaying information and/or objects
3 in a complex system using a graphical user interface. At the time of the invention of
4 the '389 patent, the amount of information available and the numbers of components in
5 complex systems had begun to grow rapidly. The volume of information and
6 components made it difficult to organize and present information on a computer's two
7 dimensional screen in a way that was both comprehensive and understandable.
8 Attempting to display all of the information or components at once resulted in an overly
9 cluttered display with various objects overlapping each other making it difficult, if not
10 impossible, to determine the relevant details of and relationships between the
11 information that a user was attempting to view. In order to view information or
12 components of interest, users could individually select items they wished to view to
13 bring them to the forefront of the display. While this allowed users to be able to zoom
14 in on relevant information, it resulted in pieces of related information and components
15 having unequal levels of emphasis on the display. This led to user confusion over the
16 relationships between the various pieces of information and components that were being
17 displayed. Thus, there was a need in the prior art to be able to display, on a two
18 dimensional computer screen, a large amount of information in a manner that allowed
19 a user to seamlessly navigate between various groups of related information.

20 36. The inventors of the '389 patent recognized the need to facilitate effective
21 understanding and management of these vast amounts of information and complex
22 systems. The patentees recognized that if they grouped the objects at issue into various
23 logical groups that were assigned to different layers, they could effectively organize and
24 navigate through the information and components on a two dimensional computer
25 screen. If each of the objects were grouped into layers, and all of the objects in the same
26 layer had the same display attributes, it would aid the user in distinguishing between
27 the various displayed layers of objects. The user could then emphasize or de-emphasize
28 the different layers and their display attributes in order to focus on a particular group of

1 objects. This improved upon the prior art by allowing users to be able to visually
2 comprehend relationships between the objects in the layers as well as the relationships
3 between various layers of the system. The inventors further improve upon the prior art
4 by allowing a user to navigate through the layers in order to view the most desired
5 objects as well as to reassign objects to a selected layer in order to customize and change
6 the relationships between the objects as necessary.

7 **I. IBM Invented Methods For Automatically Associating Related**
8 **Advertisements To Individual Search Results Items Rather Than Search**
9 **Queries.**

10 37. The inventors of the '443 patent developed the patented technologies as
11 part of IBM's efforts to improve Internet search engine technology in the area of e-
12 commerce solutions and, in specific, targeted advertisements. At the time of the
13 invention of the '443 patent, it had become increasingly popular to provide, for
14 example, banner ads to website users. However, existing banner ads had inherent
15 drawbacks. First, they were shown to users regardless of whether those ads had been
16 specifically solicited. Second, those ads relied on user profiling that required collecting
17 and building user profiles, which could not be easily employed by website owners who
18 were not technically savvy and/or without available resources. For example, it was
19 important, yet extremely difficult to ensure that user profiles remain current. A user
20 who was interested in, for example, buying an automobile may no longer be interested
21 in it, simply because he or she had just purchased one. In addition, it was also difficult
22 to identify a specific user, such as a user who recently became interested in purchasing
23 automobiles, and associate the correct advertisement profile to the user. This problem
24 was compounded by users for which profiles did not exist or by those who were
browsing anonymously.

25 38. The inventors of the '443 patent recognized the challenges and limitations
26 of the existing solutions and developed novel technologies for associating an
27 advertisement with a search result. The '443 patent inventors developed a method that
28 no longer relied on the use of user profiling, which was difficult and cumbersome to

1 employ. The inventors realized that they could present relevant advertisement to users
2 on demand by way of assimilating, correlating, and displaying advertisements during
3 an Internet search based on the keywords that a user input and the search results
4 returned. Advertisements could therefore be more accurately targeted to users' current
5 interests without having to rely on potentially outdated information contained in a user
6 profile. Furthermore, by focusing on the search performed by the user, the inventors of
7 the '443 patent were able to present relevant advertisements even if a profile did not
8 exist for that particular user or the user was browsing anonymously. The inventors
9 realized that this would provide a more accurate distribution of advertisements to users
10 and likely increase the chance that users would click on the presented advertisements.

11 **J. IBM Invented Methods For Improving Computer-Generated Promotions**
12 **By Using Promotion Templates.**

13 39. The inventors of the '904 patent developed the patented technologies as
14 part of IBM's efforts to improve how promotions were generated and how they were
15 subsequently managed and organized. At the time of the invention of the '904 patent,
16 challenges in managing promotions arose out of the multitude of various situations in
17 which promotions are used. For example, marketers in different industries may have
18 specialized considerations when communicating with potential or existing customers,
19 and each industry may have different types of promotions directed to different types of
20 products or services. This created challenges for generating and keeping track of the
21 various promotions that were created. In order to be effective, individual promotions
22 needed to be quickly and efficiently created and then delivered to the relevant interested
23 customers. The number of individual promotions that needed to be generated could
24 range from hundreds to thousands of individual promotions. Problems arose in trying
25 to individually create each promotion for display to the relevant customers in a timely
26 fashion. Individually creating each promotion could be extremely time consuming and
27 resource intensive. It was possible that by the time each promotion had been created
28 and made ready for display, the information contained in the promotion had become

1 outdated. Thus, there existed a need to quickly and effectively create each individual
2 promotion. However, once the problem of how to quickly create the individual
3 promotions had been addressed, there still existed the problem of finding the appropriate
4 promotions, organizing them, and getting those promotions to the right customers. A
5 need existed to find and to group related promotions together in a way so that they could
6 then be provided to the relevant customers.

7 40. The inventors of the '904 patent addressed these existing problems by
8 designing technology to produce a dynamic promotion list for promotion management.
9 They realized that by creating a promotion list populated by relevant promotional
10 instances generated through the use of promotion templates, they could more easily
11 store, manipulate, and distribute the promotions. The use of templates to create
12 promotions greatly decreased the time to generate all of the needed promotions. The
13 inventors also found a way to group the relevant promotions by using user generated
14 search queries that identified one or more attributes of a promotion. A user could then
15 select the promotions that were returned having the corresponding attributes and add
16 them to the promotion list. Once the promotions had been added to the list, the
17 promotions could be displayed or sent to the relevant customers. Additionally, by using
18 a query that dynamically returns promotion instances that match the query, the inventors
19 were able to generate a dynamic promotion list that could be updated without user
20 intervention to reflect any changes in promotion instances. The promotion list could
21 also be used to analyze promotions that shared related attributes. The inventions
22 described in the '904 patent thus allow for the effective creation, organization, and
23 management of promotions for use across a wide range of industries.

24 **K. Zillow Has Built Its Business By Infringing IBM's Patents.**

25 41. Zillow provides customers with access to real estate listings and provide
26 real estate agents with advertisements and other services. Zillow also purchases homes
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28

1 directly from customers that they repair and sell.¹¹ Zillow Group and its subsidiaries
2 have grown rapidly over the last several years and now have over one billion dollars of
3 annual revenue.¹²

4 42. Rather than build their business on their own technologies, Zillow has
5 appropriated the inventions of the Patents-In-Suit. The website, www.zillow.com, and
6 the associated mobile applications under Zillow's control use the technology claimed
7 by the Patents-In-Suit to provide customers access to real estate listings and provide
8 advertisements and other services for real estate agents. IBM has informed Zillow of
9 its infringement, but Zillow continues to infringe despite the knowledge of their
10 infringement.

11 43. IBM has attempted to reach a patent licensing agreement to end Zillow's
12 unauthorized use of IBM's patents since at least June 2016. Since that time, IBM has
13 sent Zillow numerous letters concerning their infringement of the Patents-in-Suit. IBM
14 has also met and held telephone calls with representatives from Zillow to attempt to
15 negotiate a license.

16 44. On August 11, 2017, IBM sent Zillow a letter informing them that they
17 were infringing several patents, including the '849 and '789 patents. On October 31,
18 2017, IBM further informed Zillow that it was infringing the '346 patent. At a meeting
19 between the parties on November 13, 2017, IBM presented detailed claim charts
20 demonstrating how Zillow was infringing the '849, '789, and '346 patents, along with
21 several others patents.

22 45. IBM informed Zillow that it was infringing the '183 and '389 patents on
23 January 14, 2019. At that time, IBM also provided detailed claim charts demonstrating
24 how Zillow was infringing those patents. Finally, on August 26, 2019, IBM informed
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27 ¹¹ Ex. 8 (<https://www.zillow.com/offers/>) (describing the process by which Zillow
28 purchases and then sells a seller's home).

¹² Ex. 4 (Zillow Group's 2018 10-K) at 42.

1 Zillow that it was infringing the '904 and '443 patents and again provided detailed claim
2 charts demonstrating their infringement.

3 46. IBM has repeatedly attempted to reach a negotiated solution to Zillow's
4 infringement of the Patents-In-Suit and has presented detailed examples of their
5 infringement of each of the Patents-In-Suit. But Zillow has refused to engage in any
6 meaningful discussions about reaching a license agreement to end their infringement of
7 IBM's patents. Instead, Zillow has continued to willfully infringe IBM's patents so as
8 to obtain the significant benefits of IBM's innovations without paying any
9 compensation to IBM.

10 47. Because IBM's over three-year struggle to negotiate a license agreement
11 that remedies Zillow's unlawful conduct has failed, IBM has been forced to seek relief
12 through litigation. Among other relief sought, IBM seeks royalties on the billions of
13 dollars in revenue that Zillow has received based on their infringement of IBM's
14 patented technology.

15 **COUNT ONE**

16 **INFRINGEMENT OF THE '849 PATENT**

17 48. IBM incorporates by reference paragraphs 1-47.

18 49. IBM is the owner of all right, title and interest in the '849 patent. The '849
19 patent was duly and properly issued by the USPTO on July 4, 2006. The '849 patent
20 was duly assigned to IBM. A copy of the '849 patent is attached hereto as Exhibit 9.

21 50. The '849 patent is valid and enforceable.

22 51. In violation of 35 U.S.C. § 271, Zillow has infringed, contributed to the
23 infringement of, and/or induced others to infringe one or more of the claims of the '849
24 patent by having made, designed, offered for sale, sold, provided, used, maintained,
25 and/or supported their websites, including www.zillow.com and the associated mobile
26 applications, including the Zillow application for mobile devices running on, for
27 example, the Apple iOS and Google Android operating systems. Zillow's infringement
28 is continuing.

1 52. Zillow Group “operates the largest portfolio of real estate and home-
2 related brands on mobile and the web which focus on all stages of the home lifecycle:
3 renting, buying, selling and financing. . . . The Zillow Group portfolio of consumer
4 brands includes Zillow”¹³ Zillow Group directs and controls the infringing
5 behavior of its agent, Zillow, Inc., which Zillow Group operates and wholly owns.

6 53. Zillow, Inc. owns and operates the Zillow website, www.zillow.com, and
7 the Zillow mobile applications on, for example, the iOS and Android operating systems.
8 Zillow, Inc. provides online real estate listings and related services to consumers and
9 local real estate agents through the website and mobile application instrumentalities.

10 54. Zillow Group provides a comprehensive suite of marketing software and
11 technology solutions to help real estate, rental, and mortgage professionals maximize
12 business opportunities and connect with millions of consumers. Zillow Group's
13 “technology solutions” and actions related to such technology infringe, direct or control
14 infringement, induce infringement, and/or contribute to the infringement through the
15 website www.zillow.com and through the mobile application instrumentalities.

16 55. For example, www.zillow.com and Zillow mobile applications infringe at
17 least claim 1 of the '849 patent at least by:

18 a. presenting advertising obtained from a computer network (such as
19 the Internet), the network including a multiplicity of user reception systems (such as the
20 computers or mobile devices of www.zillow.com's customers) at which respective
21 users can request applications (such as Buy, Sell, Rent, etc.), from the network, that
22 include interactive services (such as offering rental listings), the respective reception
23 systems including a monitor (such as a computer monitor or mobile screen of a
24 www.zillow.com customer's computer or mobile device) at which at least the visual
25 portion of the applications can be presented as one or more screens of display, the
26 method comprising the steps of:

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¹³ Ex. 4 (Zillow Group 2018 10-K) at 3.

1 b. structuring applications (such as Buy, Sell, Rent, etc.) so that they
2 may be presented, through the network, at a first portion (such as the portion of the
3 webpage in which the content for Buy, Sell, Rent, etc. is presented) of one or more
4 screens of display; and:

5 c. structuring advertising (such as rental listings) in a manner
6 compatible to that of the applications so that it may be presented, through the network,
7 at a second portion (such as the portion of the webpage in which the advertising for
8 rentals is presented) of one or more screens of display concurrently with applications
9 (such as Buy, Sell, Rent, etc.), wherein structuring the advertising includes configuring
10 the advertising as objects (such as HTTP Responses containing png or jpeg files) that
11 include advertising data and;

12 d. selectively storing (such as by setting a cache control parameter)
13 advertising objects at a store (such as the browser cache) established at the reception
14 system.

15 56. Zillow has had knowledge of the '849 patent and their alleged infringement
16 since August 11, 2017.

17 57. On information and belief, end users and customers of www.zillow.com
18 and the associated mobile applications directly infringe the '849 patent through the use
19 of the websites and mobile applications to view at least real estate listings. Zillow
20 Group's Annual Report lists \$1,333,554,000 of revenue from its website and mobile
21 applications which "generate revenue from the sale of advertising services and our suite
22 of marketing software and technology solutions."¹⁴ The revenue indicates that
23 numerous end users and customers used www.zillow.com and the associated mobile
24 application in order to view real estate listings and thereby infringe the '849 patent.

25 58. On information and belief, despite their knowledge of the infringement of
26 the '849 patent, Zillow has intended and continue to intend to induce patent
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¹⁴ *Id.* at 3, 42.

1 infringement by third parties. For example, Zillow has and continues to encourage and
2 instruct customers and end users to use www.zillow.com and the associated mobile
3 applications in a manner that infringes the '849 patent by advertising the websites and
4 mobile applications, providing customer support, and designing their website and
5 mobile applications in such a way that the use of the website and mobile applications
6 by an end user or customer infringes the '849 patent. For example,
7 <https://zillow.zendesk.com/hc/en-us> provides direction and support for
8 www.zillow.com. On information and belief, to the extent Zillow was not aware that
9 they were encouraging their customers and end users to infringe the '849 patent, its lack
10 of knowledge was based on being willfully blind to the possibility that their acts would
11 cause infringement.

12 59. On information and belief, despite knowledge of the infringement of the
13 '849 patent, Zillow intended and continues to intend to contribute to patent infringement
14 by third parties. For example, Zillow provides HTML and HTTP responses, such as
15 png and/or jpeg files, to customers and end users in a manner that infringes the '849
16 patent and does not have substantial non-infringing uses.

17 60. IBM has been damaged by the infringement of its '849 patent by Zillow
18 and will continue to be damaged by such infringement. IBM is entitled to recover from
19 Zillow the damages sustained by IBM as a result of Zillow's wrongful acts.

20 61. The infringement by Zillow of the '849 patent was, and continues to be,
21 deliberate and willful, entitling IBM to increased damages under 35 U.S.C. § 284 and
22 to attorney fees and costs incurred in prosecuting this action under 35 U.S.C. § 285. In
23 committing these acts of infringement, Zillow actually knew or should have known that
24 their actions constituted an unjustifiably high risk of infringement of a valid and
25 enforceable patent.

26 62. IBM has suffered and continues to suffer irreparable harm, for which there
27 is no adequate remedy at law, and will continue to do so unless Zillow is enjoined
28 therefrom by this Court. In committing these acts of infringement, Zillow actually knew

1 or should have known that its actions constituted an unjustifiably high risk of
2 infringement of a valid and enforceable patent.

3 **COUNT TWO**

4 **INFRINGEMENT OF THE '346 PATENT**

5 63. IBM incorporates by reference paragraphs 1-62.

6 64. IBM is the owner of all right, title and interest in the '346 patent. The '346
7 patent was duly and properly issued by the USPTO on December 8, 2009. The '346
8 patent was duly assigned to IBM. A copy of the '346 patent is attached hereto as Exhibit
9 10.

10 65. The '346 patent is valid and enforceable.

11 66. In violation of 35 U.S.C. § 271, Zillow has infringed, contributed to the
12 infringement of, and/or induced others to infringe one or more of the claims of the '346
13 patent by having made, designed, offered for sale, sold, provided, used, maintained,
14 and/or supported their websites, including www.zillow.com and the associated mobile
15 applications, including the Zillow application for mobile devices running on, for
16 example, the Apple iOS and Google Android operating systems. Zillow's infringement
17 is continuing.

18 67. Zillow Group "operates the largest portfolio of real estate and home-
19 related brands on mobile and the web which focus on all stages of the home lifecycle:
20 renting, buying, selling and financing. . . . The Zillow Group portfolio of consumer
21 brands includes Zillow" ¹⁵ Zillow Group directs and controls the infringing
22 behavior of its agent, Zillow, Inc., which Zillow Group operates and wholly owns.

23 68. Zillow, Inc. owns and operates the Zillow website, www.zillow.com, and
24 the Zillow mobile applications on, for example, the iOS and Android operating systems.
25 Zillow, Inc. provides online real estate listings and related services to consumers and
26 local real estate agents through the website and mobile application instrumentalities.

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28 ¹⁵ Ex. 4 (Zillow Group 2018 10-K) at 3.

1 69. Zillow Group provides a comprehensive suite of marketing software and
2 technology solutions to help real estate, rental, and mortgage professionals maximize
3 business opportunities and connect with millions of consumers. Zillow Group's
4 “technology solutions” and actions related to such technology infringe, direct or control
5 infringement, induce infringement, and/or contribute to the infringement through the
6 website www.zillow.com and through the mobile application instrumentalities.

7 70. For example, www.zillow.com and Zillow mobile applications infringe at
8 least claim 1 of the '346 patent at least by:

9 a. managing user authentication (such as verifying the identity of a
10 www.zillow.com user) within a distributed data processing system (such as a computer
11 network), wherein a first system (such as Facebook and its network) and a second
12 system (such as Zillow and its network) interact within a federated computing
13 environment (such as a computer network; for example, the Internet, including
14 Facebook and Zillow) and support single-sign-on operations (“Sign In” operations) in
15 order to provide access to protected resources (such as the “My Zillow” option on
16 www.zillow.com or “Saved Homes” on the associated mobile applications), at least one
17 of the first system and the second system comprising a processor, the method
18 comprising:

19 b. triggering a single-sign-on operation (such as launching an
20 operation to “Sign In” using Facebook) on behalf of the user in order to obtain access
21 to a protected resource that is hosted by the second system, wherein the second system
22 requires a user account for the user to complete the single-sign-on operation (such as
23 requiring the user to have a www.zillow.com account) prior to providing access to the
24 protected resource;

25 c. receiving from the first system at the second system an identifier
26 associated with the user (such as an email address, Facebook ID, or access token); and

27 d. creating a user account (such as a www.zillow.com account) for the
28 user at the second system based at least in part on the received identifier associated with

1 the user after triggering the single-sign-on operation but before generating at the second
2 system a response for accessing the protected resource (such as the “My Zillow” option
3 on www.zillow.com or “Saved Homes” on the associated mobile applications), wherein
4 the created user account supports single-sign-on operations (such as “Sign In”
5 operations at www.zillow.com using a Facebook account) between the first system and
6 the second system on behalf of the user.

7 71. Zillow has had knowledge of the ’346 patent and their alleged infringement
8 since October 31, 2017.

9 72. On information and belief, end users and customers of www.zillow.com
10 and the associated mobile applications directly infringe the ’346 patent through the use
11 of the websites and mobile applications to log in and view at least saved real estate
12 listings. Zillow Group’s Annual Report lists \$1,333,554,000 of revenue from its
13 website and mobile applications which “generate revenue from the sale of advertising
14 services and our suite of marketing software and technology solutions.”¹⁶ The revenue
15 indicates that numerous end users and customers used www.zillow.com and the
16 associated mobile application in order to view real estate listings and thereby infringe
17 the ’346 patent.

18 73. On information and belief, despite their knowledge of the infringement of
19 the ’346 patent, Zillow has intended and continue to intend to induce patent
20 infringement by third parties. For example, Zillow has and continues to encourage and
21 instruct customers and end users to use www.zillow.com and the associated mobile
22 applications in a manner that infringes the ’346 patent by advertising the websites and
23 mobile applications, providing customer support, and designing their website and
24 mobile applications in such a way that the use of the website and mobile applications
25 by an end user or customer infringes the ’346 patent. For example,
26 <https://zillow.zendesk.com/hc/en-us> provides direction and support for
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28 ¹⁶ *Id.* at 3, 42.

1 www.zillow.com. On information and belief, to the extent Zillow was not aware that it
2 was encouraging its customers and end users to infringe the '346 patent, their lack of
3 knowledge was based on being willfully blind to the possibility that their acts would
4 cause infringement.

5 74. On information and belief, despite knowledge of the infringement of the
6 '346 patent, Zillow intended and continues to intend to contribute to patent infringement
7 by third parties. For example, Zillow provides single-sign-on on to its website and
8 mobile applications that results in the creation of an account for its websites and mobile
9 applications to customers and end users in a manner that infringes the '346 patent and
10 does not have substantial non-infringing uses.

11 75. IBM has been damaged by the infringement of its '346 patent by Zillow
12 and will continue to be damaged by such infringement. IBM is entitled to recover from
13 Defendants the damages sustained by IBM as a result of Zillow's wrongful acts.

14 76. The infringement by Zillow of the '346 patent was, and continues to be,
15 deliberate and willful, entitling IBM to increased damages under 35 U.S.C. § 284 and
16 to attorney fees and costs incurred in prosecuting this action under 35 U.S.C. § 285. In
17 committing these acts of infringement, Zillow actually knew or should have known that
18 its actions constituted an unjustifiably high risk of infringement of a valid and
19 enforceable patent.

20 77. IBM has suffered and continues to suffer irreparable harm, for which there
21 is no adequate remedy at law, and will continue to do so unless Zillow is enjoined
22 therefrom by this Court. In committing these acts of infringement, Zillow actually knew
23 or should have known that their actions constituted an unjustifiably high risk of
24 infringement of a valid and enforceable patent.

25 **COUNT THREE**

26 **INFRINGEMENT OF THE '183 PATENT**

27 78. IBM incorporates by reference paragraphs 1-77.
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1 79. IBM is the owner of all right, title and interest in the '183 patent. The '183
2 patent was duly and properly issued by the USPTO on January 26, 2016. The '183
3 patent was duly assigned to IBM. A copy of the '183 patent is attached hereto as Exhibit
4 11.

5 80. The '183 patent is valid and enforceable.

6 81. In violation of 35 U.S.C. § 271, Zillow has infringed, contributed to the
7 infringement of, and/or induced others to infringe one or more of the claims of the '183
8 patent by having made, designed, offered for sale, sold, provided, used, maintained,
9 and/or supported their websites, including www.zillow.com. Zillow's infringement is
10 continuing.

11 82. Zillow Group "operates the largest portfolio of real estate and home-
12 related brands on mobile and the web which focus on all stages of the home lifecycle:
13 renting, buying, selling and financing. . . . The Zillow Group portfolio of consumer
14 brands includes Zillow" ¹⁷ Zillow Group directs and controls the infringing
15 behavior of its agent, Zillow, Inc., which Zillow Group operates and wholly owns.

16 83. Zillow, Inc. owns and operates the Zillow website, www.zillow.com.
17 Zillow, Inc. provides online real estate listings and related services to consumers and
18 local real estate agents through the website.

19 84. Zillow Group provides a comprehensive suite of marketing software and
20 technology solutions to help real estate, rental, and mortgage professionals maximize
21 business opportunities and connect with millions of consumers. Zillow Group's
22 "technology solutions" and actions related to such technology infringe, direct or control
23 infringement, induce infringement, and/or contribute to the infringement through the
24 website www.zillow.com.

25 85. For example, Zillow has infringed claim 1 of the '183 patent by perform a
26 method comprising:

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¹⁷ Ex. 4 (Zillow Group 2018 10-K) at 3.

1 a. retrieving in real time, by a computer processor of a computing
2 system (such as a Zillow server's processor), image data associated with a plurality of
3 locations within a specified geographical area (such as photos of properties uploaded to
4 Zillow by its users and real estate agents);

5 b. comparing, by said computer processor, said image data to a
6 plurality of stored image data (such as photos of properties stored by Zillow), wherein
7 said plurality of stored image data comprise baseline measurement values associated
8 with an expected condition level of baseline locations within a baseline geographical
9 area (such as by using stored image data to train an artificial intelligence model that
10 "sees" in photos features that humans would appreciate)¹⁸;

11 c. calculating, by said computer processor based on results of said
12 comparing, condition score values (such as calculating Zestimate scores based on
13 computer analysis of photos of properties) associated with said plurality of locations
14 (such as properties on Zillow, Inc.), wherein said condition score values indicate real
15 time condition values associated with said plurality of locations (such as qualities of
16 those properties);

17 d. calculating, by said computer processor based on said condition
18 score values, an overall condition score value associated with said specified
19 geographical area (such as a Zillow Home Value Index for a region)¹⁹; and

20 e. generating, by said computer processor, a map indicating said
21 overall condition score value associated with said specified geographical area (such as
22 a map indicating the Zillow Home Value Index of the region).

23 86. Zillow has had knowledge of the '183 patent and its alleged infringement
24 since January 14, 2019.

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27 ¹⁸ Ex. 12 (<https://venturebeat.com/2019/06/26/zillow-now-uses-computer-vision-to-improve-property-value-estimates/>).

28 ¹⁹ Ex. 13 (<https://www.zillow.com/info/whats-the-zillow-home-value-index/>).

1 87. On information and belief, end users and customers of www.zillow.com
2 directly infringe the '183 patent through the use of the websites to view at least real
3 estate listings and Zillow Home Value Indexes. Zillow Group's Annual Report lists
4 \$1,333,554,000 of revenue from its website and mobile applications which "generate
5 revenue from the sale of advertising services and our suite of marketing software and
6 technology solutions."²⁰ The revenue indicates that numerous end users and customers
7 used www.zillow.com in order to view real estate listings and Home Value Indexes and
8 thereby infringe the '183 patent.

9 88. On information and belief, despite their knowledge of the infringement of
10 the '183 patent, Zillow has intended and continues to intend to induce patent
11 infringement by third parties. For example, Zillow has and continues to encourage and
12 instruct customers and end users to use www.zillow.com in a manner that infringes the
13 '183 patent by advertising the websites, providing customer support, and designing their
14 website in such a way that the use of the website by an end user or customer infringes
15 the '183 patent. For example, <https://zillow.zendesk.com/hc/en-us> provides direction
16 and support for www.zillow.com. On information and belief, to the extent Zillow was
17 not aware that it was encouraging its customers and end users to infringe the '183 patent,
18 its lack of knowledge was based on being willfully blind to the possibility that its acts
19 would cause infringement.

20 89. On information and belief, despite knowledge of the infringement of the
21 '183 patent, Zillow intended and continues to intend to contribute to patent infringement
22 by third parties. For example, Zillow provides the functionality to allow users view
23 Home Index Values and Zestimates for real estate listings in desired areas in a manner
24 that infringes the '183 patent and does not have substantial non-infringing uses.

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²⁰ Ex. 4 (Zillow Group 2018 10-K) at 3, 42.

1 97. Zillow Group “operates the largest portfolio of real estate and home-
2 related brands on mobile and the web which focus on all stages of the home lifecycle:
3 renting, buying, selling and financing. . . . The Zillow Group portfolio of consumer
4 brands includes Zillow”²¹ Zillow Group directs and controls the infringing
5 behavior of its agent, Zillow, Inc., which Zillow Group operates and wholly owns.

6 98. Zillow, Inc. owns and operates the Zillow website, www.zillow.com, and
7 the Zillow mobile applications on, for example, the iOS and Android operating systems.
8 Zillow, Inc. provides online real estate listings and related services to consumers and
9 local real estate agents through the website and mobile application instrumentalities.

10 99. Zillow Group provides a comprehensive suite of marketing software and
11 technology solutions to help real estate, rental, and mortgage professionals maximize
12 business opportunities and connect with millions of consumers. Zillow Group's
13 “technology solutions” and actions related to such technology infringe, direct or control
14 infringement, induce infringement, and/or contribute to the infringement through the
15 website www.zillow.com and through the mobile application instrumentalities.

16 100. For example, www.zillow.com and Zillow mobile applications infringe at
17 least claim 8 of the '789 patent at least by:

18 a. presenting a map display (such as a map view of search results) on
19 a display device, wherein the map display comprises elements (such as properties in the
20 search result) within a viewing area of the map display, wherein the elements comprise
21 geospatial characteristics (such as geospatial locations of properties), wherein the
22 elements comprise selected and unselected elements (such as by displaying all of the
23 properties in a particular map view);

24 b. presenting a list display on the display device (such as a list view of
25 search results), wherein the list display comprises a customizable list comprising the
26 elements from the map display (such as by allowing users to adjust the search result list
27

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²¹ Ex. 4 (Zillow Group 2018 10-K) at 3.

1 by for example changing zoom level or by selecting specific features);

2 c. receiving a user input drawing a selection area in the viewing area
3 of the map display (such as receiving a user-drawn boundary in the map view), wherein
4 the selection area (such as the area within the user-drawn boundary) is a user determined
5 shape, wherein the selection area is smaller than the viewing area of the map display,
6 wherein the viewing area comprises elements that are visible within the map display
7 and are outside the selection area (such as by displaying properties throughout the entire
8 map display);

9 d. selecting any unselected elements within the selection area (such as
10 by displaying properties in the user-drawn boundary) in response to the user input
11 drawing the selection area and deselecting any selected elements outside the selection
12 area (such as by not displaying properties outside the user-drawn boundary) in response
13 to the user input drawing the selection area; and

14 e. synchronizing the map display and the list display to concurrently
15 update the selection and deselection of the elements according to the user input (such
16 as by updating the list view according to the user-drawn boundary to only include those
17 properties in the user drawn boundary), the selection and deselection occurring on both
18 the map display and the list display.

19 101. Zillow has had knowledge of the '789 patent and its alleged infringement
20 since August 11, 2017.

21 102. On information and belief, end users and customers of www.zillow.com
22 and the associated mobile applications directly infringe the '789 patent through the use
23 of the websites and mobile applications to view at least real estate listings on a map and
24 list display. Zillow Group's Annual Report lists \$1,333,554,000 of revenue from its
25 website and mobile applications which "generate revenue from the sale of advertising
26 services and our suite of marketing software and technology solutions."²² The revenue
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28 ²² *Id.* at 3, 42.

1 indicates that numerous end users and customers used www.zillow.com and the
2 associated mobile application in order to search for and view real estate listings and
3 thereby infringe the '789 patent.

4 103. On information and belief, despite their knowledge of the infringement of
5 the '789 patent, Zillow has intended and continues to intend to induce patent
6 infringement by third parties. For example, Zillow has and continues to encourage and
7 instruct customers and end users to use www.zillow.com and the associated mobile
8 applications in a manner that infringes the '789 patent by advertising the websites and
9 mobile applications, providing customer support, and designing its website and mobile
10 applications in such a way that the use of the website and mobile applications by an end
11 user or customer infringes the '789 patent. For example,
12 <https://zillow.zendesk.com/hc/en-us> provides direction and support for
13 www.zillow.com. Zillow, Inc. also specifically advertises the infringing
14 functionality.²³ On information and belief, to the extent Zillow was not aware that it
15 was encouraging its customers and end users to infringe the '789 patent, its lack of
16 knowledge was based on being willfully blind to the possibility that their acts would
17 cause infringement.

18 104. On information and belief, despite knowledge of the infringement of the
19 '789 patent, Zillow intended and continues to intend to contribute to patent infringement
20 by third parties. For example, Zillow provides HTML and HTTP responses, such as
21 maps and search results corresponding to user drawn searches, to customers and end
22 users in a manner that infringes the '789 patent and does not have substantial non-
23 infringing uses.

24 105. IBM has been damaged by the infringement of its '789 patent by Zillow
25 and will continue to be damaged by such infringement. IBM is entitled to recover from
26 Defendants the damages sustained by IBM as a result of Zillow's wrongful acts.

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28 ²³ Ex. 15 (<https://www.zillowgroup.com/news/new-draw-your-own-search-on-zillow-com/>).

1 brands includes Zillow”²⁴ Zillow Group directs and controls the infringing
2 behavior of its agent, Zillow, Inc., which Zillow Group operates and wholly owns.

3 112. Zillow, Inc. owns and operates the Zillow website, www.zillow.com, and
4 the Zillow mobile applications on, for example, the iOS and Android operating systems.
5 Zillow, Inc. provides online real estate listings and related services to consumers and
6 local real estate agents through the website and mobile application instrumentalities.

7 113. Zillow Group provides a comprehensive suite of marketing software and
8 technology solutions to help real estate, rental, and mortgage professionals maximize
9 business opportunities and connect with millions of consumers. Zillow Group's
10 “technology solutions” and actions related to such technology infringe, direct or control
11 infringement, induce infringement, and/or contribute to the infringement through the
12 website www.zillow.com and through the mobile application instrumentalities.

13 114. For example, Zillow, Inc. has infringed claim 1 of the '389 patent by
14 performing a method of displaying layered data (such as different categories of
15 properties), said method comprising:

16 a. selecting one or more objects (such as properties in a search result)
17 to be displayed in a plurality of layers (such as a layer of “for sale” properties and a
18 layer of unlisted properties);

19 b. identifying a plurality of non-spatially distinguishable display
20 attributes, wherein one or more of the non-spatially distinguishable display attributes
21 corresponds to each of the layers (such as properties that are “for sale” and unlisted
22 properties);

23 c. matching each of the objects to one of the layers (such as by
24 determining a property is, e.g., “for sale” or not listed and assigning it to a layer);

25 d. applying the non-spatially distinguishable display attributes
26 corresponding to the layer for each of the matched objects (such as by marking the
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²⁴ Ex. 4 (Zillow Group 2018 10-K) at 3.

1 property as a “for sale” property or an unlisted property);

2 e. determining a layer order for the plurality of layers (such as by
3 determining a layer order of the “for sale” layer versus the layer of unlisted properties),
4 wherein the layer order determines a display emphasis corresponding to the objects
5 from the plurality of objects in the corresponding layers (such as by overlaying objects
6 of the most recently selected layer on top of the other layer); and

7 f. displaying the objects with the applied non-spatially distinguishable
8 display attributes based upon the determination (such as by displaying the properties
9 with the determined layer order), wherein the objects in a first layer from the plurality
10 of layers are visually distinguished from the objects in the other plurality of layers based
11 upon the non-spatially distinguishable display attributes of the first layer (such as by
12 layering the properties marked “for sale” above the properties marked as an unlisted
13 property).

14 115. Zillow has had knowledge of the ’389 patent and its alleged infringement
15 since January 14, 2019.

16 116. On information and belief, end users and customers of www.zillow.com
17 and the associated mobile applications directly infringe the ’389 patent through the use
18 of the websites and mobile applications to view at least real estate listings. Zillow
19 Group’s Annual Report lists \$1,333,554,000 of revenue from its website and mobile
20 applications which “generate revenue from the sale of advertising services and our suite
21 of marketing software and technology solutions.”²⁵ The revenue indicates that
22 numerous end users and customers used www.zillow.com and the associated mobile
23 application in order to view real estate listings and thereby infringe the ’389 patent.

24 117. On information and belief, despite their knowledge of the infringement of
25 the ’389 patent, Zillow has intended and continues to intend to induce patent
26 infringement by third parties. For example, Zillow has and continues to encourage and
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28 ²⁵ *Id.* at 3, 42.

1 instruct customers and end users to use www.zillow.com and the associated mobile
2 applications in a manner that infringes the '389 patent by advertising the websites and
3 mobile applications, providing customer support, and designing its website and mobile
4 applications in such a way that the use of the website and mobile applications by an end
5 user or customer infringes the '389 patent. For example,
6 <https://zillow.zendesk.com/hc/en-us> provides direction and support for
7 www.zillow.com. On information and belief, to the extent Zillow was not aware that it
8 was encouraging its customers and end users to infringe the '389 patent, its lack of
9 knowledge was based on being willfully blind to the possibility that their acts would
10 cause infringement.

11 118. On information and belief, despite knowledge of the infringement of the
12 '389 patent, Zillow intended and continues to intend to contribute to patent infringement
13 by third parties. For example, Zillow provides HTML and HTTP responses, such as
14 the location of properties on a map that are displayed to end users in a manner that
15 infringes the '389 patent and does not have substantial non-infringing uses.

16 119. IBM has been damaged by the infringement of its '389 patent by Zillow
17 and will continue to be damaged by such infringement. IBM is entitled to recover from
18 Defendants the damages sustained by IBM as a result of Zillow's wrongful acts.

19 120. The infringement by Zillow of the '389 patent was, and continues to be,
20 deliberate and willful, entitling IBM to increased damages under 35 U.S.C. § 284 and
21 to attorney fees and costs incurred in prosecuting this action under 35 U.S.C. § 285. In
22 committing these acts of infringement, Zillow actually knew or should have known that
23 its actions constituted an unjustifiably high risk of infringement of a valid and
24 enforceable patent.

25 121. IBM has suffered and continues to suffer irreparable harm, for which there
26 is no adequate remedy at law, and will continue to do so unless Zillow is enjoined
27 therefrom by this Court. In committing these acts of infringement, Zillow actually knew
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1 or should have known that its actions constituted an unjustifiably high risk of
2 infringement of a valid and enforceable patent.

3 **COUNT SIX**

4 **INFRINGEMENT OF THE '443 PATENT**

5 122. IBM incorporates by reference paragraphs 1-121.

6 123. IBM is the owner of all right, title and interest in the '443 patent. The '443
7 patent was duly and properly issued by the USPTO on July 11, 2006. The '443 patent
8 was duly assigned to IBM. A copy of the '443 patent is attached hereto as Exhibit 17.

9 124. The '443 patent is valid and enforceable.

10 125. In violation of 35 U.S.C. § 271, Zillow has infringed, contributed to the
11 infringement of, and/or induced others to infringe one or more of the claims of the '443
12 patent by having made, designed, offered for sale, sold, provided, used, maintained,
13 and/or supported their websites, including www.zillow.com and the associated mobile
14 applications, including the Zillow application for mobile devices running on, for
15 example, the Apple iOS and Google Android operating systems. Zillow's infringement
16 is continuing.

17 126. Zillow Group "operates the largest portfolio of real estate and home-
18 related brands on mobile and the web which focus on all stages of the home lifecycle:
19 renting, buying, selling and financing. . . . The Zillow Group portfolio of consumer
20 brands includes Zillow" ²⁶ Zillow Group directs and controls the infringing
21 behavior of its agent, Zillow, Inc., which Zillow Group operates and wholly owns.

22 127. Zillow, Inc. owns and operates the Zillow website, www.zillow.com, and
23 the Zillow mobile applications on, for example, the iOS and Android operating systems.
24 Zillow, Inc. provides online real estate listings and related services to consumers and
25 local real estate agents through the website and mobile application instrumentalities.

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²⁶ Ex. 4 (Zillow Group 2018 10-K) at 3.

1 128. Zillow Group provides a comprehensive suite of marketing software and
2 technology solutions to help real estate, rental, and mortgage professionals maximize
3 business opportunities and connect with millions of consumers. Zillow Group's
4 “technology solutions” and actions related to such technology infringe, direct or control
5 infringement, induce infringement, and/or contribute to the infringement through the
6 website www.zillow.com and through the mobile application instrumentalities.

7 129. For example, Zillow, Inc. has infringed claim 1 of the '443 patent by
8 performing a method of targeting at least one associated advertisement from an Internet
9 search having access to an information repository by a user (such as by showing “similar
10 homes” in response to a user’s search for properties on Zillow), comprising:

11 a. identifying at least one search result item (such as at least one
12 property listing from a user’s Zillow search results) from a search result of said Internet
13 search by said user;

14 b. searching for said at least one associated advertisement (such as
15 listings of “similar homes”) within said repository (such as Zillow, Inc.’s repository of
16 property information) using said at least one search result item;

17 c. identifying said at least one associated advertisement from said
18 repository having at least one word that matches said at least one search result item
19 (such as by identify similar homes that are in the same geographical area as the search
20 result listing); and

21 d. correlating said at least one associated advertisement with said at
22 least one search result item (such as by including information of “similar homes” in the
23 same JSON file as the search result item).

24 130. Zillow has had knowledge of the '443 patent and its alleged infringement
25 since August 26, 2019.

26 131. On information and belief, end users and customers of www.zillow.com
27 and the associated mobile applications directly infringe the '443 patent through the use
28 of the websites and mobile applications to view at least real estate listings. Zillow

1 Group's Annual Report lists \$1,333,554,000 of revenue from its website and mobile
2 applications which "generate revenue from the sale of advertising services and our suite
3 of marketing software and technology solutions."²⁷ The revenue indicates that
4 numerous end users and customers used www.zillow.com and the associated mobile
5 application in order to view real estate listings and associated advertisements and
6 thereby infringe the '443 patent.

7 132. On information and belief, despite their knowledge of the infringement of
8 the '443 patent, Zillow has intended and continues to intend to induce patent
9 infringement by third parties. For example, Zillow has and continues to encourage and
10 instruct customers and end users to use www.zillow.com and the associated mobile
11 applications in a manner that infringes the '443 patent by advertising the websites and
12 mobile applications, providing customer support, and designing its website and mobile
13 applications in such a way that the use of the website and mobile applications by an end
14 user or customer infringes the '443 patent. For example,
15 <https://zillow.zendesk.com/hc/en-us> provides direction and support for
16 www.zillow.com. On information and belief, to the extent Zillow was not aware that
17 they were encouraging their customers and end users to infringe the '443 patent, its lack
18 of knowledge was based on being willfully blind to the possibility that its acts would
19 cause infringement.

20 133. On information and belief, despite knowledge of the infringement of the
21 '443 patent, Zillow intended and continues to intend to contribute to patent infringement
22 by third parties. For example, Zillow provides HTML and HTTP responses, such
23 advertisements associated with real estate listings, to customers and end users in a
24 manner that infringes the '443 patent and does not have substantial non-infringing uses.

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²⁷ *Id.* at 3, 42.

1 134. IBM has been damaged by the infringement of its '443 patent by Zillow
2 and will continue to be damaged by such infringement. IBM is entitled to recover from
3 Defendants the damages sustained by IBM as a result of Zillow's wrongful acts.

4 135. The infringement by Zillow of the '443 patent was, and continues to be,
5 deliberate and willful, entitling IBM to increased damages under 35 U.S.C. § 284 and
6 to attorney fees and costs incurred in prosecuting this action under 35 U.S.C. § 285. In
7 committing these acts of infringement, Zillow actually knew or should have known that
8 its actions constituted an unjustifiably high risk of infringement of a valid and
9 enforceable patent.

10 136. IBM has suffered and continues to suffer irreparable harm, for which there
11 is no adequate remedy at law, and will continue to do so unless Zillow is enjoined
12 therefrom by this Court. In committing these acts of infringement, Zillow actually knew
13 or should have known that their actions constituted an unjustifiably high risk of
14 infringement of a valid and enforceable patent.

15 **COUNT SEVEN**

16 **INFRINGEMENT OF THE '904 PATENT**

17 137. IBM incorporates by reference paragraphs 1-136.

18 138. IBM is the owner of all right, title and interest in the '904 patent. The '904
19 patent was duly and properly issued by the USPTO on Nov. 20, 2012. The '904 patent
20 was duly assigned to IBM. A copy of the '904 patent is attached hereto as Exhibit 18.

21 139. The '904 patent is valid and enforceable.

22 140. In violation of 35 U.S.C. § 271, Zillow has infringed, contributed to the
23 infringement of, and/or induced others to infringe one or more of the claims of the '904
24 patent by having made, designed, offered for sale, sold, provided, used, maintained,
25 and/or supported its websites, including www.zillow.com and the associated mobile
26 applications, including the Zillow application for mobile devices running on, for
27 example, the Apple iOS and Google Android operating systems. Zillow's infringement
28 is continuing.

141. Zillow Group “operates the largest portfolio of real estate and home-related brands on mobile and the web which focus on all stages of the home lifecycle: renting, buying, selling and financing. . . . The Zillow Group portfolio of consumer brands includes Zillow”²⁸ Zillow Group directs and controls the infringing behavior of its agent, Zillow, Inc., which Zillow Group operates and wholly owns.

142. Zillow, Inc. owns and operates the Zillow website, www.zillow.com, and the Zillow mobile applications on, for example, the iOS and Android operating systems. Zillow, Inc. provides online real estate listings and related services to consumers and local real estate agents through the website and mobile application instrumentalities.

143. Zillow Group provides a comprehensive suite of marketing software and technology solutions to help real estate, rental, and mortgage professionals maximize business opportunities and connect with millions of consumers. Zillow Group's “technology solutions” and actions related to such technology infringe, direct or control infringement, induce infringement, and/or contribute to the infringement through the website www.zillow.com and through the mobile application instrumentalities.

144. For example, Zillow, Inc. has infringed claim 1 of the '904 patent by performing a computer implemented method comprising:

a. producing, by one or more computers, a promotion list for a promotion management campaign (such as by displaying a number of properties in response to a user search) by:

b. generating, by one or more computers, a promotion instance from a promotion template (such as by generating a property listing to display as a promotion from a template that includes elements such as “list-card-addr”, “list-card-type”, “list-card-heading”);

c. receiving, by one or more computers executing marketing campaign software (such as a Zillow, Inc. server), a search query that includes one or more

²⁸ Ex. 4 (Zillow Group 2018 10-K) at 3.

1 attributes of a promotion instance (such as a search query for, e.g., rental properties in
2 Seattle, WA);

3 d. searching one or more data repositories (such as Zillow, Inc.'s
4 repository of property information) for promotion instances having attributes
5 corresponding to the attributes specified in the search query (such as property listings
6 that meet the criteria of rental properties in Seattle, WA);

7 e. returning a list including one or more promotion instances having
8 the attributes corresponding to the attributes specified in the search query (such as by
9 returning a list of, for example, rental properties in Seattle, WA);

10 f. receiving, by the one or more computers, a selection of one or more
11 promotion instances (such as a number of properties that are similar to the properties a
12 user is viewing), from the returned list, to be included in the promotion list;

13 g. assigning the selected promotion instances to the promotions list;
14 and

15 h. storing the promotion list in an electronic medium (such as the
16 HTTP file retrieved in response to the user query).

17 145. Zillow has had knowledge of the '904 patent and its alleged infringement
18 since August 26, 2019.

19 146. On information and belief, end users and customers of www.zillow.com
20 and the associated mobile applications directly infringe the '904 patent through the use
21 of the websites and mobile applications to view at least real estate listings. Zillow
22 Group's Annual Report lists \$1,333,554,000 of revenue from its website and mobile
23 applications which "generate revenue from the sale of advertising services and our suite
24 of marketing software and technology solutions."²⁹ The revenue indicates that
25 numerous end users and customers used www.zillow.com and the associated mobile
26 application in order to view real estate listings and thereby infringe the '904 patent.

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28 ²⁹ *Id.* at 3, 42.

1 147. On information and belief, despite their knowledge of the infringement of
2 the '904 patent, Zillow has intended and continues to intend to induce patent
3 infringement by third parties. For example, Zillow has and continues to encourage and
4 instruct customers and end users to use www.zillow.com and the associated mobile
5 applications in a manner that infringes the '904 patent by advertising the websites and
6 mobile applications, providing customer support, and designing its website and mobile
7 applications in such a way that the use of the website and mobile applications by an end
8 user or customer infringes the '904 patent. For example,
9 <https://zillow.zendesk.com/hc/en-us> provides direction and support for
10 www.zillow.com. On information and belief, to the extent Zillow was not aware that
11 they were encouraging their customers and end users to infringe the '904 patent, its lack
12 of knowledge was based on being willfully blind to the possibility that their acts would
13 cause infringement.

14 148. On information and belief, despite knowledge of the infringement of the
15 '904 patent, Zillow intended and continues to intend to contribute to patent infringement
16 by third parties. For example, Zillow provides HTML and HTTP responses, such as
17 png and/or jpeg files and data corresponding to promotional instances, to customers and
18 end users in a manner that infringes the '904 patent and does not have substantial non-
19 infringing uses.

20 149. IBM has been damaged by the infringement of its '904 patent by Zillow
21 and will continue to be damaged by such infringement. IBM is entitled to recover from
22 Defendants the damages sustained by IBM as a result of Zillow's wrongful acts.

23 150. The infringement by Zillow of the '904 patent was, and continues to be,
24 deliberate and willful, entitling IBM to increased damages under 35 U.S.C. § 284 and
25 to attorney fees and costs incurred in prosecuting this action under 35 U.S.C. § 285. In
26 committing these acts of infringement, Zillow actually knew or should have known that
27 its actions constituted an unjustifiably high risk of infringement of a valid and
28 enforceable patent.

151. IBM has suffered and continues to suffer irreparable harm, for which there is no adequate remedy at law, and will continue to do so unless Zillow is enjoined therefrom by this Court. In committing these acts of infringement, Zillow actually knew or should have known that their actions constituted an unjustifiably high risk of infringement of a valid and enforceable patent.

RELIEF REQUESTED

Wherefore, IBM respectfully requests that this Court enter judgment against the Defendants as follows:

- A. That the '849 patent has been and continues to be infringed by Defendants;
- B. That Defendants' infringement of the '849 patent has been willful;
- C. An injunction against further infringement of the '849 patent;
- D. That the '346 patent has been and continues to be infringed by Defendants;
- E. That Defendants' infringement of the '346 patent has been willful;
- F. An injunction against further infringement of the '346 patent;
- G. That the '183 patent has been and continues to be infringed by Defendants;
- H. That Defendants' infringement of the '183 patent has been willful;
- I. An injunction against further infringement of the '183 patent;
- J. That the '789 patent has been and continues to be infringed by Defendants;
- K. That Defendants' infringement of the '789 patent has been willful;
- L. An injunction against further infringement of the '789 patent;
- M. That the '398 patent has been and continues to be infringed by Defendants;
- N. That Defendants' infringement of the '398 patent has been willful;
- O. An injunction against further infringement of the '398 patent;
- P. That the '443 patent has been and continues to be infringed by Defendants;
- Q. That Defendants' infringement of the '443 patent has been willful;
- R. An injunction against further infringement of the '443 patent;
- S. That the '904 patent has been and continues to be infringed by Defendants;
- T. That Defendants' infringement of the '904 patent has been willful;

1 U. An injunction against further infringement of the '904 patent;

2 V. An award of damages adequate to compensate IBM for the patent
3 infringement that has occurred pre-verdict and for damages that occur post-verdict,
4 together with pre-judgment interest and costs;

5 W. An award of all other damages permitted by 35 U.S.C. § 284, including
6 increased damages up to three times the amount of compensatory damages found;

7 X. That this is an exceptional case and an award to IBM of its costs and
8 reasonable attorneys' fees incurred in this action as provided by 35 U.S.C. § 285; and

9 Y. Such other relief as this Court deems just and proper.

10 **DEMAND FOR JURY TRIAL**

11 IBM hereby demands trial by jury on all claims and issues so triable.

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13
14 Dated: September 17, 2019

HANKIN PATENT LAW, APC

15 By: /Marc E. Hankin/

16 Marc E. Hankin

17 *Of Counsel:*

18 DESMARAIS LLP

19 John M. Desmarais (SBN 320875)

20 Karim Z. Oussayef (*pro hac vice*
pending)

21 Robert C. Harrits (*pro hac vice* pending)

22 230 Park Avenue

New York, New York 10169

23 Tel: (212) 351-3400

24 Fax: (212) 351-3401

jdesmarais@desmaraisllp.com

koussayef@desmaraisllp.com

rharrits@desmaraisllp.com

25 *Attorneys for Plaintiff International*
26 *Business Machines Corporation*
27
28